Device physics of hybrid perovskite solar cells

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Stellingen

behorende bij het proefschrift

Device physics of hybrid perovskite solar cells
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1. Ferroelectric polarization (if it exists in hybrid perovskites) is unlikely to explain the high performance of hybrid perovskite solar cells. (Chapter 2)
2. Trap-assisted recombination at interfaces (between the perovskite absorber and the charge transport layers) is the dominant loss mechanism in hybrid perovskite solar cells. (Chapter 3)
3. The quality of the front interface has a greater impact on the device performance of perovskite solar cells as compared to the back interface. (Chapters 3 and 4)
4. There is a direct correlation between density of trap states, density of mobile ions and the degree of hysteresis observed in the current-voltage ($J - V$) characteristics. (Chapter 4)
5. Dielectric boundaries are detrimental to the device performance as they retard efficient charge separation in devices. (Chapter 5)
6. An expeditious research into energy storage systems (e.g. batteries) using earth abundant materials is crucial if our dream of a renewable energy future is to become a reality.
7. The importance of smart usage of electricity (and data) cannot be overstated, as photovoltaic technologies (and their seasonal and distributed nature) enter the electricity mix.
8. Modelling/simulation results are often downplayed, labelling them as just 'theory'; yet theory is still used to translate experimental observations into 'findings'.